

Comprehensive Tolling Study Initial Assessment

presented to

Washington State Transportation Commission

presented by

Cambridge Systematics, Inc.

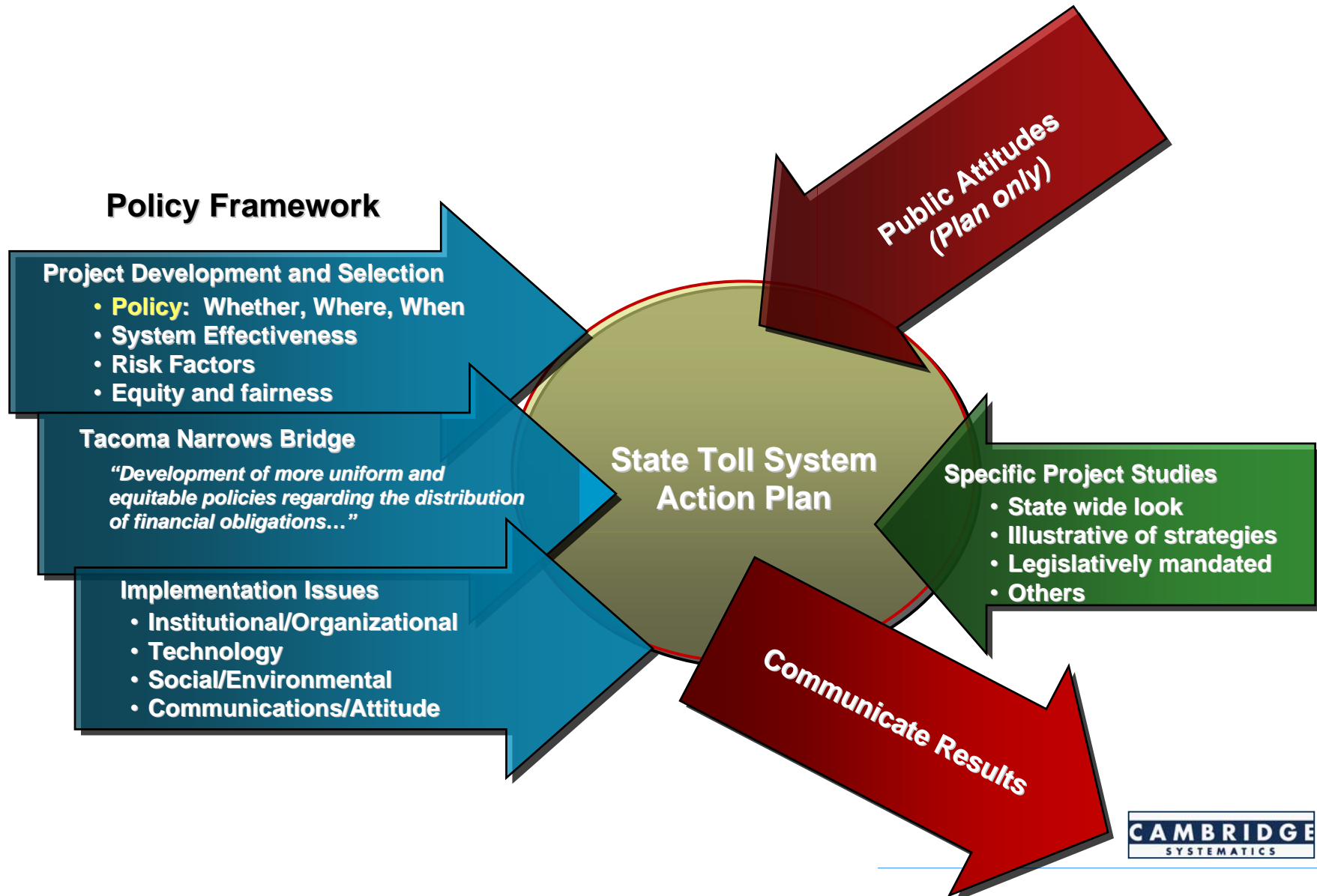
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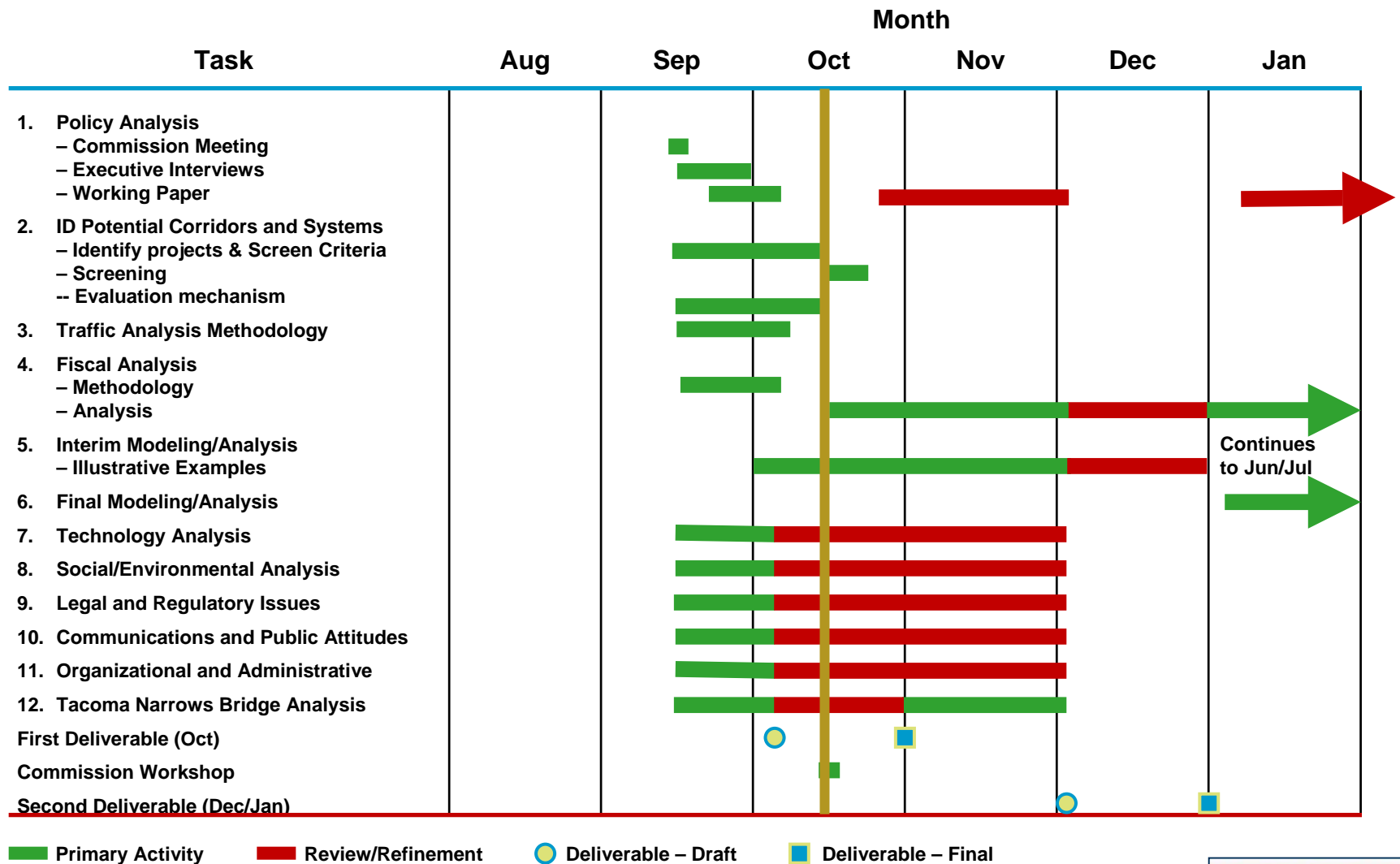
Texas Transportation Institute

October 18, 2005

Create a process that facilitates the state's ability to make policy level decisions on if, where, when, and how to toll



Schedule

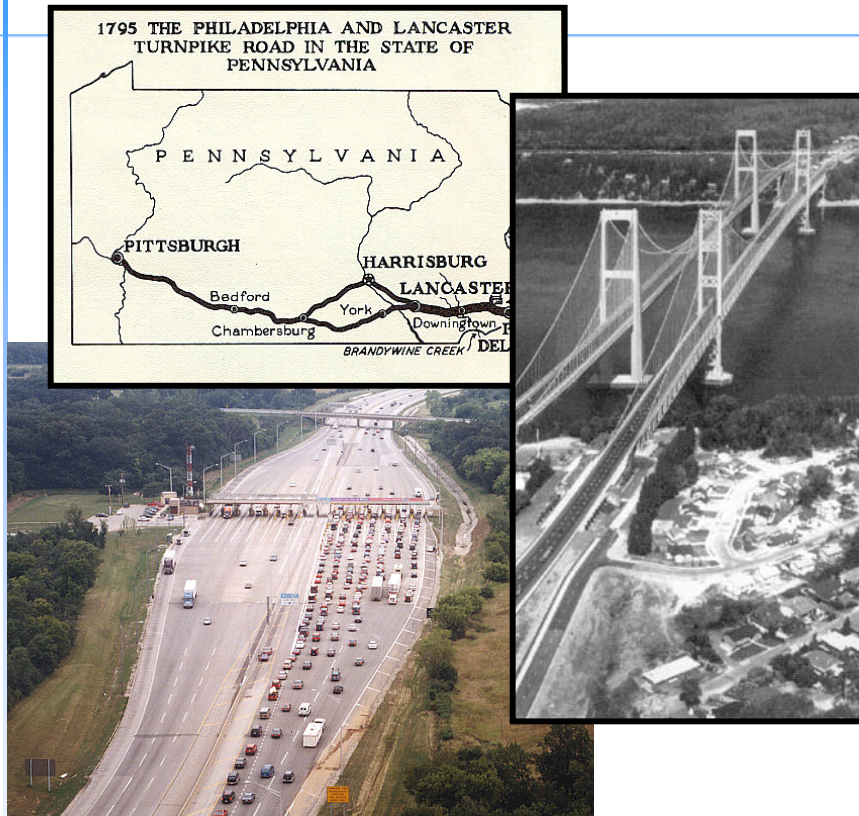




Industry Trends and Policy Considerations

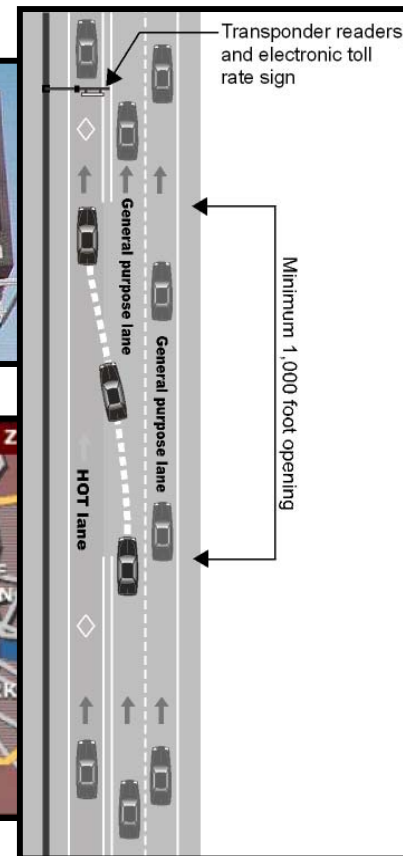
**Jeff Buxbaum
Cambridge Systematics**

New technology brings new opportunity



Tolling (traditional)

Motivation:
\$\$Funding\$\$



Pricing (new)

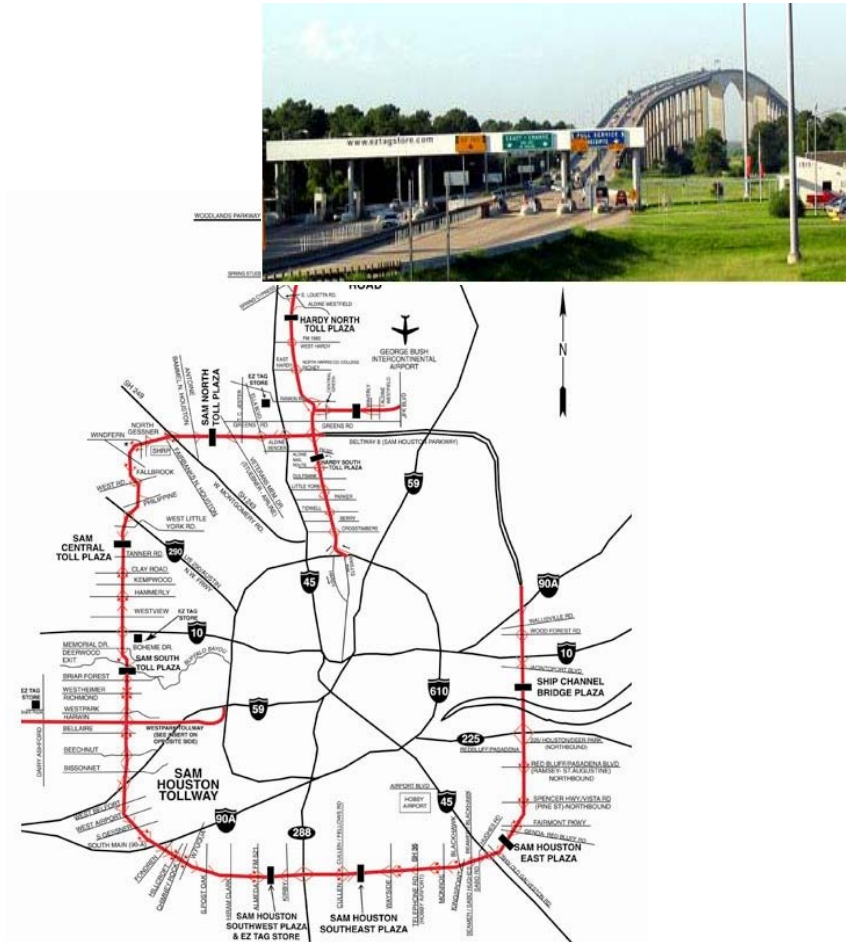
Motivation: **\$\$Efficiency\$\$**

Dividend:
\$\$Funding\$\$

Policy Drivers and Potential Projects

Funding Oriented

- **Project specific funding – Bridge, tunnel, road**
 - Toll revenue pays – all or part – if part, how much?
 - Remove tolls after debt is paid off?
- **Regional or state system finance**
 - Start with one project, leverage others over time



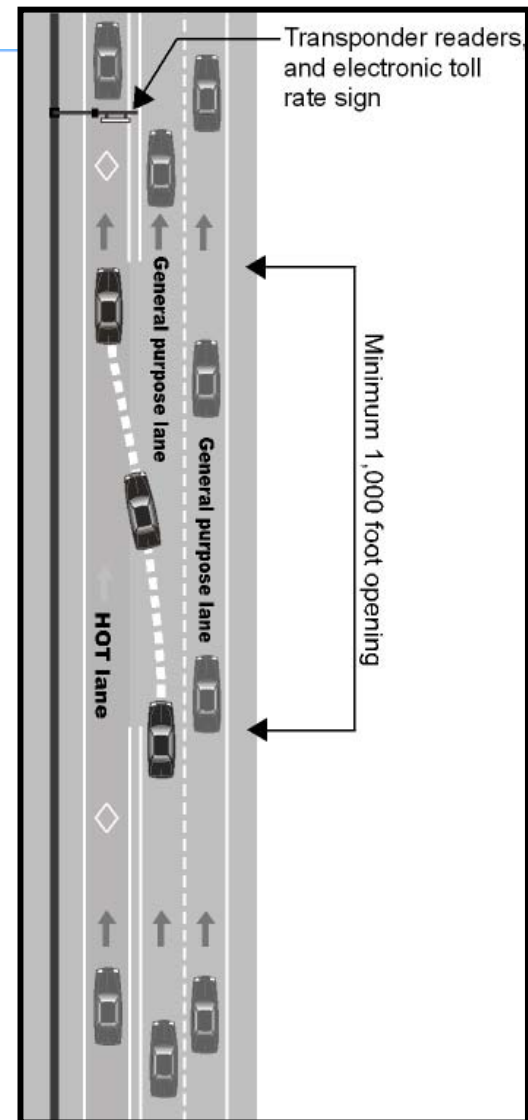
Policy Drivers and Potential Projects Management Oriented

- **HOT Lanes and HOT Lane System Conversion**

- Optimize use of HOV lanes
- Costs relatively low
- Revenues relatively low

- **HOT Lanes – Additional Capacity**

- Multiple toll lanes in each direction
- Higher revenue potential
- Higher costs
- More opportunities to improve transit line-haul



Policy Drivers and Potential Projects Management Oriented

- **Express Toll Lanes**

- Higher revenue potential, potentially self-supporting
- High opportunity to encourage transit

- **Truck only lanes**

- Safety as well as congestion benefits
- Significant design and operations issues



- **All toll lanes depend on congestion!!!**
- **Effectiveness of toll lanes depends on the tolls**

Policy Drivers and Potential Projects

On a larger scale

- **Cordon tolling**

- **To relieve intense CBD congestion**
- **Requires effective alternatives**
- **High implementation cost**



- **Mileage Based Pricing**

- **Potential replacement for fuel tax**
- **Technical and transition challenges**
- **Highest ultimate potential for revenue and management**

Policy Questions

- **To what extent is the Commission comfortable with an expanded view of tolling?**
 - **Traffic management**
 - **Less than 100% project finance**
 - **Leveraging other parts of the system**



Social equity and public attitudes

David Ungemah
Texas Transportation Institute

Concepts of Equity

- **Geographic Equity**
- **Income Equity**
- **Participation Equity**
- ***Opportunity Equity***
- ***Modal Equity***

Views on Equity and Tolling Can Change

● Then...

- Tolls were once seen as more equitable than taxes
- Few owned a vehicle in order to use roads.



● Now...

- Public opinion regards roads as a public good
- Issue of fairness and equity in public opinion when tolls considered for supplemental / alternative financing



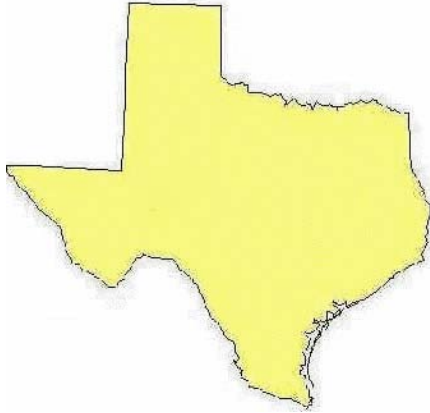
Addressing Equity Concerns in this Study

- **Are proposed toll facilities...**
 - ... located in areas of highest need?
 - ... disproportionately influenced by potential cost recovery?
- **Are there way to redistribute revenues or benefits to disadvantaged communities?**
- **Can everyone take advantage of the pricing system?**
- **Will the public accept a potential imbalance of costs and benefits?**

Public Attitudes and Perceptions

- **Persistent controversial issues**
 - **Equity for low-income individuals**
 - **Geographic distribution of benefits and burdens**
 - **Privacy of electronic toll collection**
 - **Double-taxation implications**
- **Tolls are an easy target for criticism**

Sample Findings from Peer Projects



- **55%: Toll roads unfair**
 - 51%: **Oppose** tolling for new construction
 - 71%: **Oppose** tolling for improvement
 - 52%: **Favor** HOT Lanes
- **When forced to decide,**
 - 61% **favor** tolls vs. 23% who favor gas taxes

Sample Findings from Peer Projects



- **SR-91 Express Toll Lanes evaluation**
 - Over 50% of low income households approved;
 - Low-income households have difficulty accessing facility
- **I-15 HOT Lanes low-income user surveys**
 - 60% approve of HOT lanes
 - 78% thought pay-for-use was fair
 - 75% approved of managed lanes expansion

What Works with the Public

- **Demonstrable experience with pricing**
- **Demonstrate return on investment**
 - **Acceleration**
 - **Time savings**



Administrative and Organizational

**Victor Poteat
PBS&J**

Organizational Considerations

- **Vision and Mission**
- **Type of Facilities**
- **Means of Governance**
- **Financial**
- **Management and Operations**

Types of Toll Organizations

- 1. State-level independent public toll authorities**
- 2. State DOT-sponsored and operated toll entities**
- 3. Regional independent public toll authorities**
- 4. Local agency-sponsored and operated toll entities**
- 5. Multipurpose independent public authorities and non-profits**
- 6. Public-private partnerships**

State-level Independent Public Toll Authorities

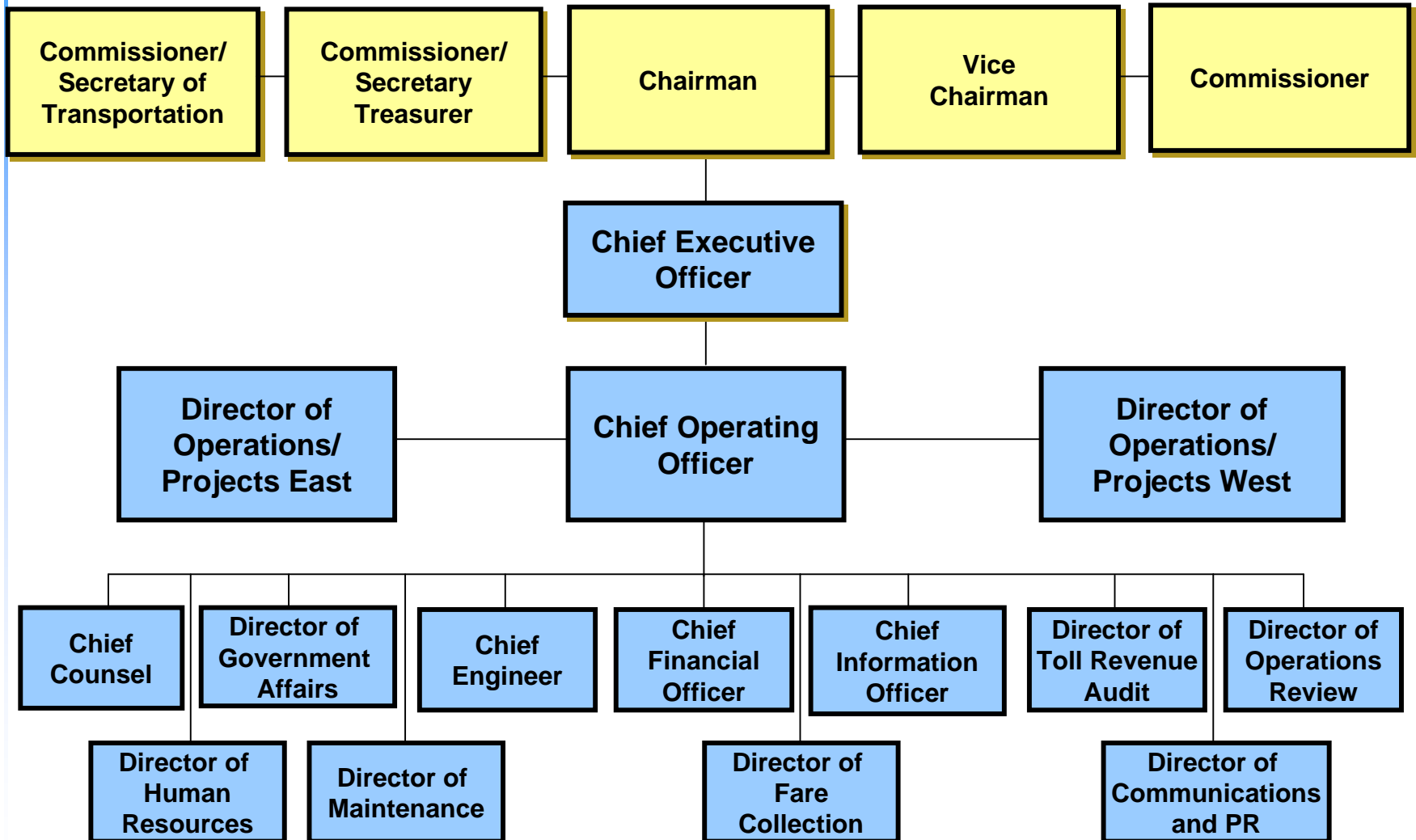
Characteristics

- State-level public agencies
- Governed by appointed board
- Highly autonomous
- Mix of commuter and intrastate facilities
- Large internal staff

● Examples

- Illinois
- Massachusetts
- New Jersey
- New York
- Oklahoma
- Pennsylvania
- West Virginia

Pennsylvania Turnpike Commission



State DOT-Sponsored Toll Entities

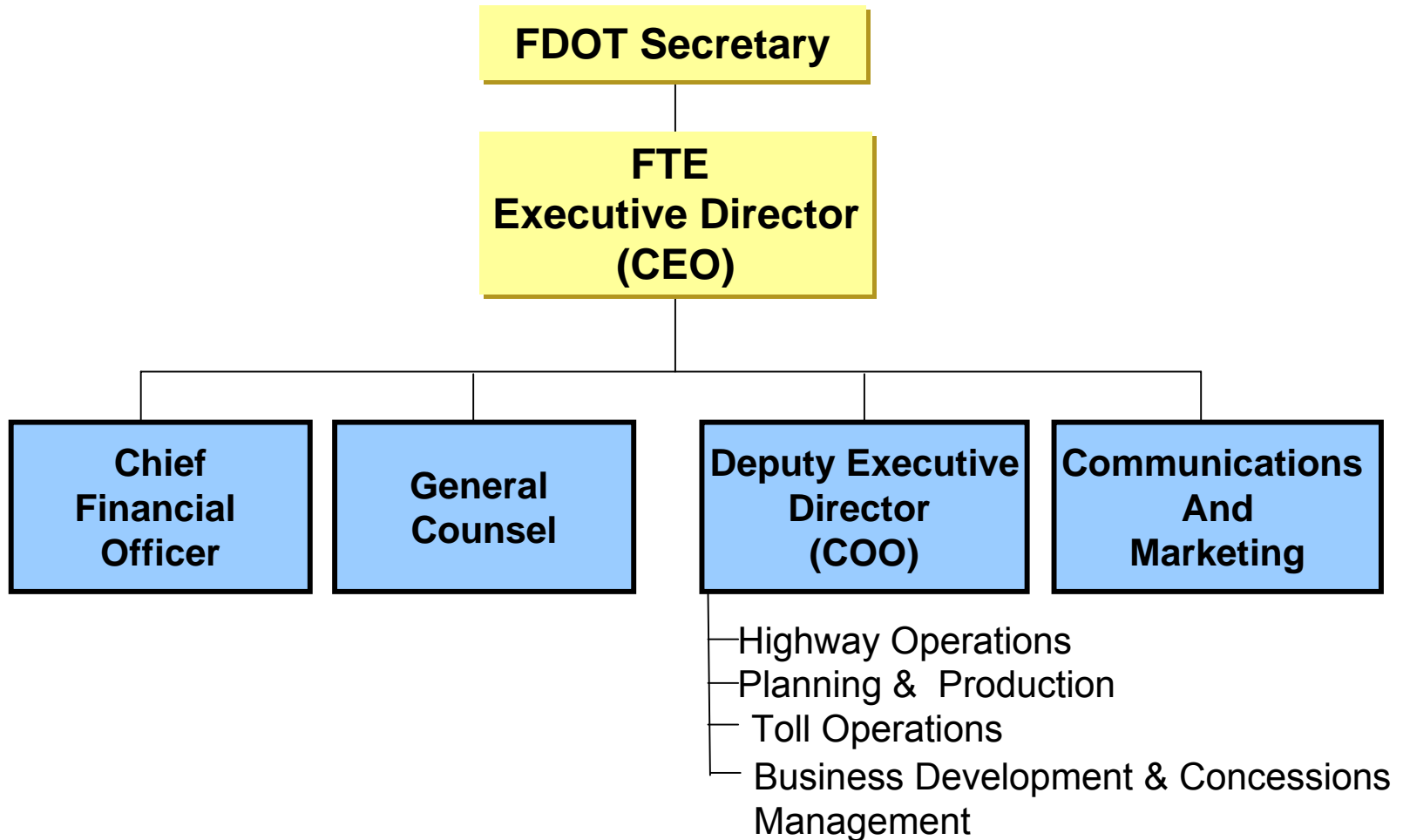
Characteristics

- Operated by division w/in DOT
- Governance by DOT CEO and/or board
- Autonomy varies by state
- Mix of commuter and intrastate facilities
- May use DOT staff from other divisions
- Full or partial project financing through toll revenue bonds

● Examples

- Florida Turnpike Enterprise
- Virginia DOT PPTA
- Texas Turnpike Authority (TTA)
- Colorado Tolling Enterprise (CTE)

Florida Turnpike Enterprise



Regional Independent Public Toll Authorities

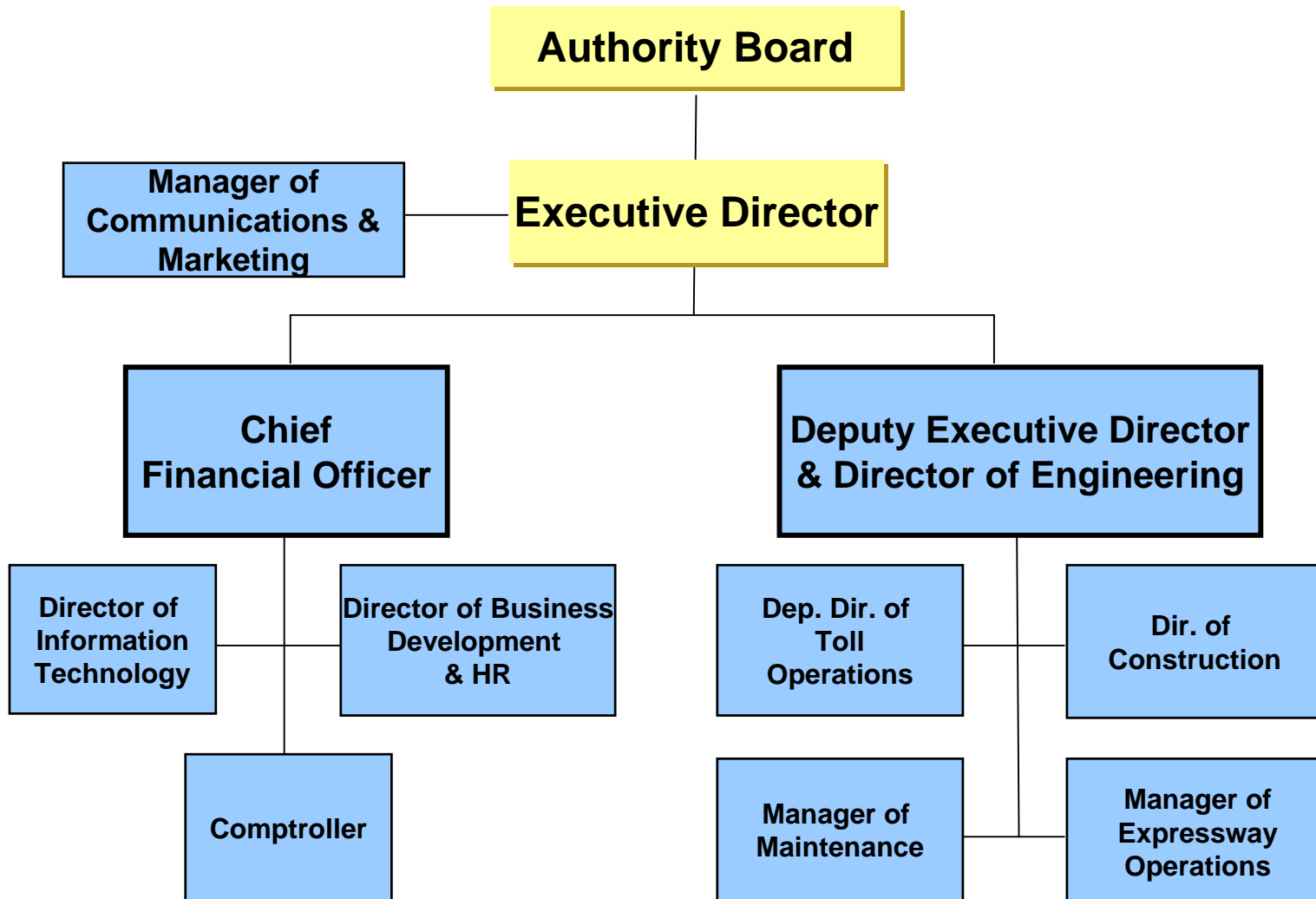
Characteristics

- State agency w/ limited geographic responsibilities or sponsored by local government
- Governance, staffing and autonomy vary
- Primarily urban commuter facilities

● Examples

- Colorado – E-470 Public Highway Authority
- Florida – Orlando-Orange County, Miami-Dade County, Tampa-Hillsborough County
- Texas – North Texas Tollway Authority, Central Texas Regional Mobility Authority

Orlando-Orange County Expressway Authority



Summary

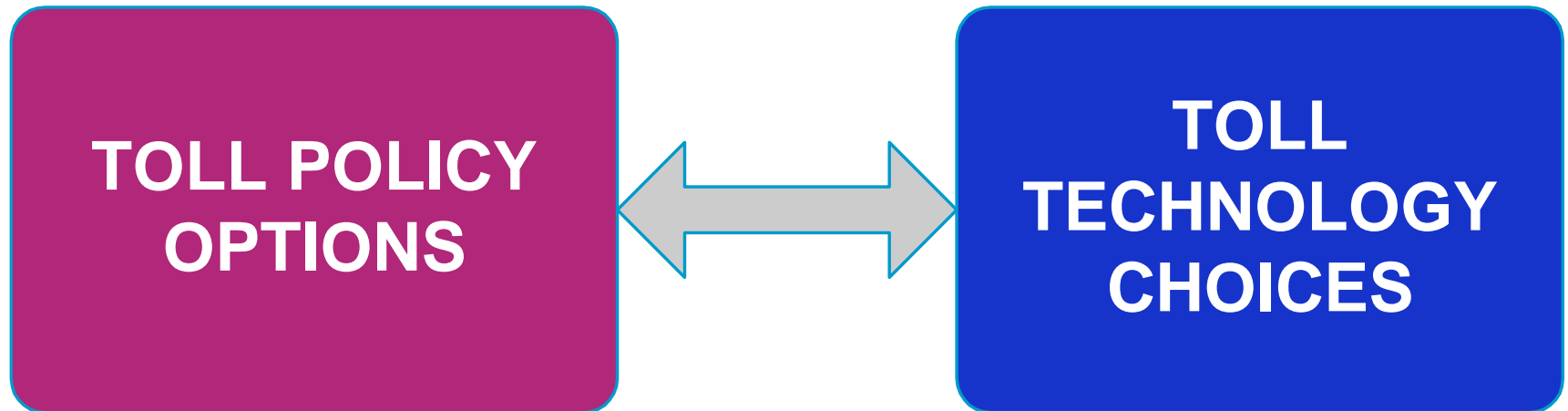
- **Several applicable organizational models exist**
- **Considerations for selecting an organizational framework include**
 - **Vision, Mission, Goals, and Objectives**
 - **Type of facilities**
 - **Governance, Financial, and Management/Operational approach**
 - **Level of local/regional participation and control**
- **Organizational approach must be customized to bring the desired result**



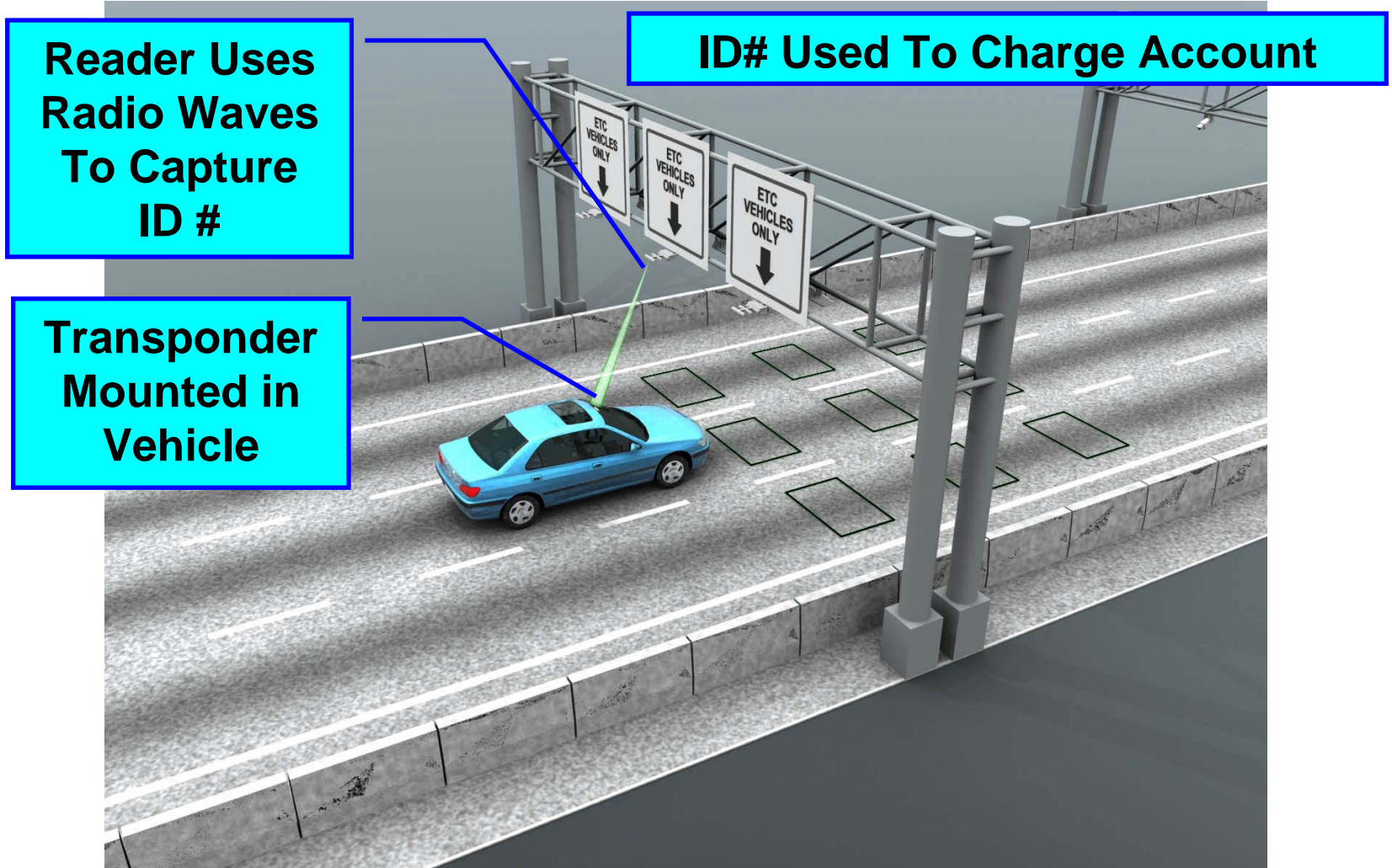
Technology and Policy

Bart Cima
IBI Group

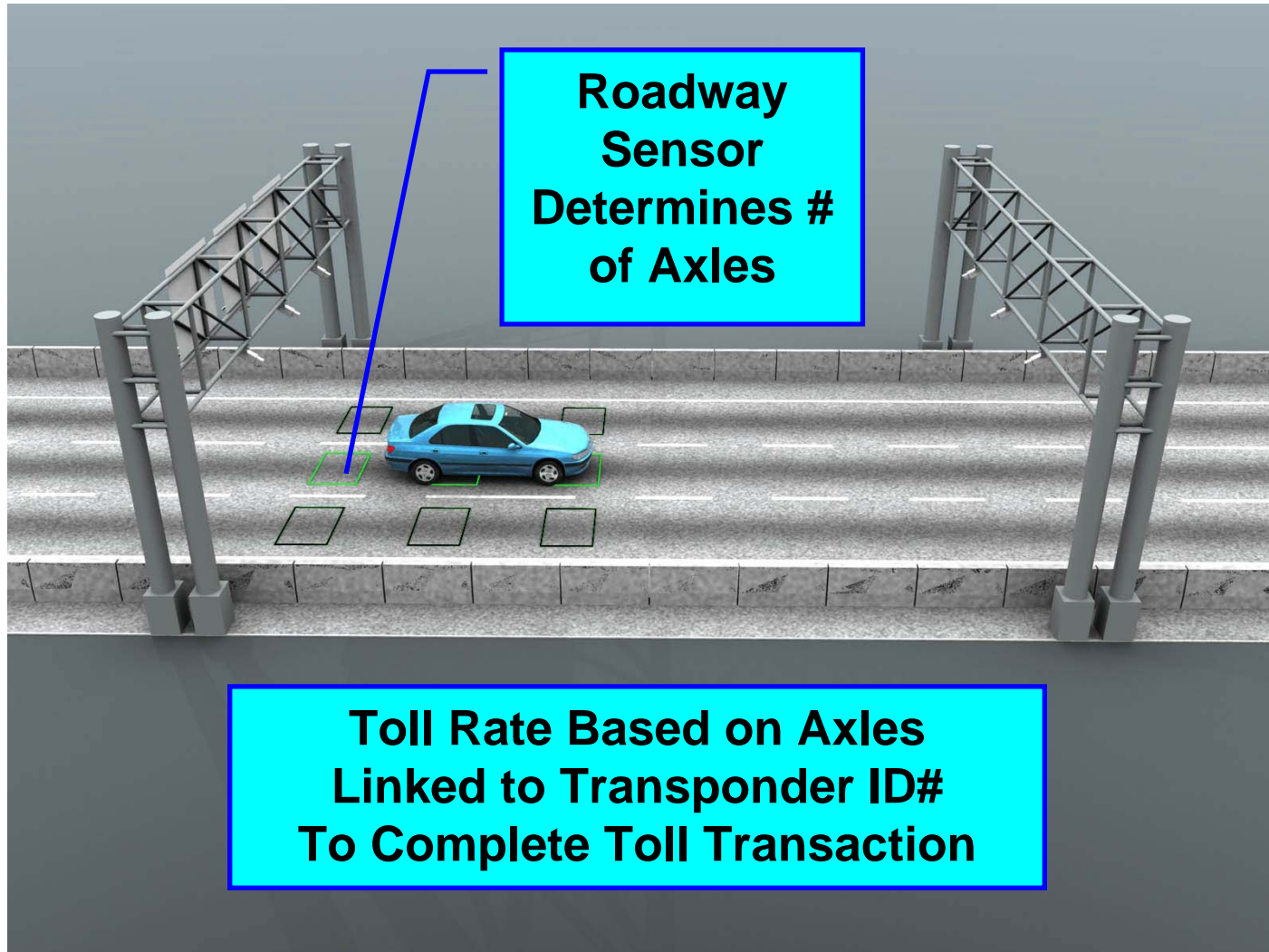
Technology and Policy: Inextricably Connected



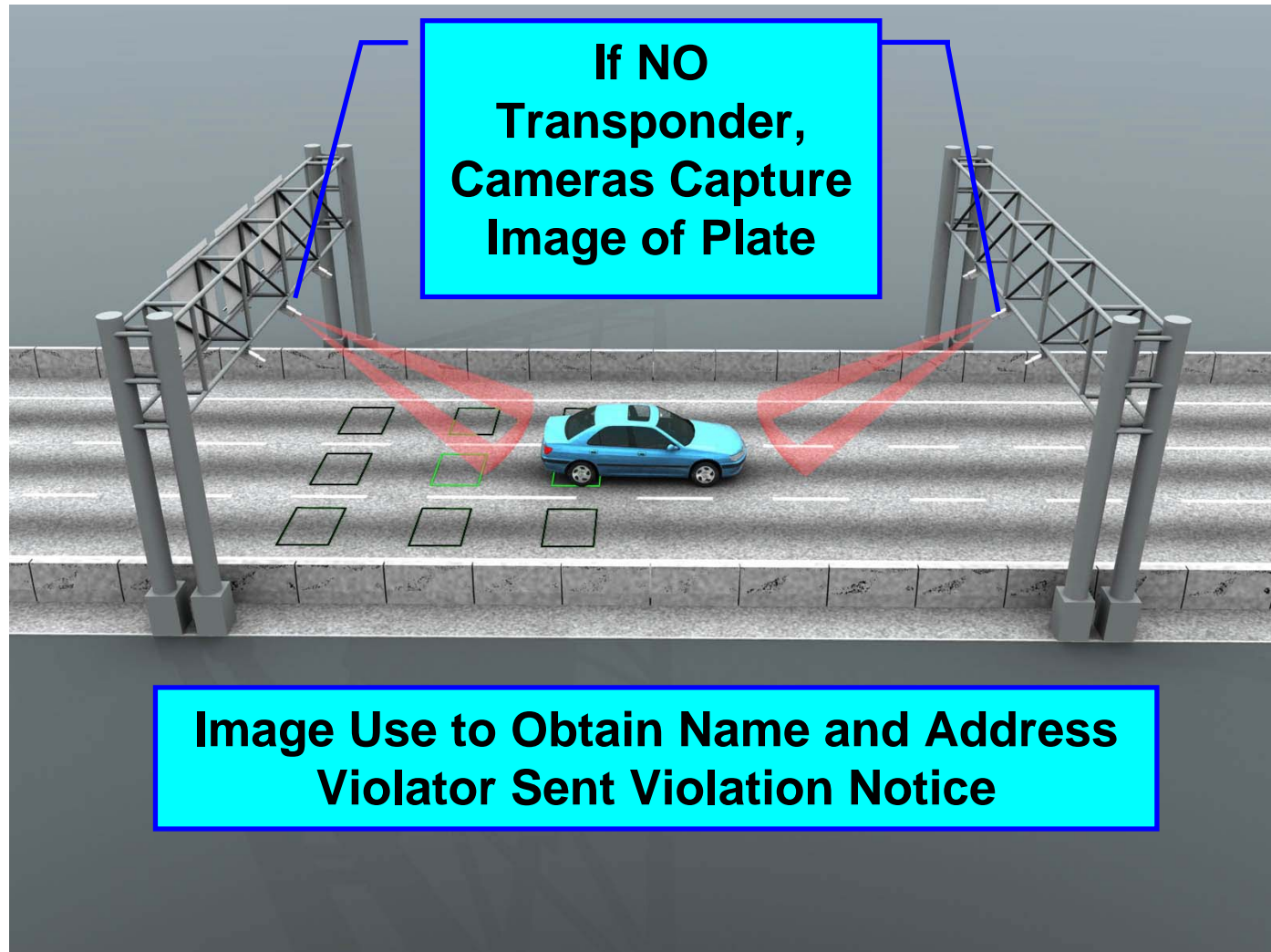
Reading the Transponder



Vehicle Classification – Setting the Toll



Capturing An Image of the License Plate



Electronic Toll Collection Is Well Established

- **Customer Expectations**

- One “Gizmo” in My Car
- One Number to Call
- One Statement or Invoice



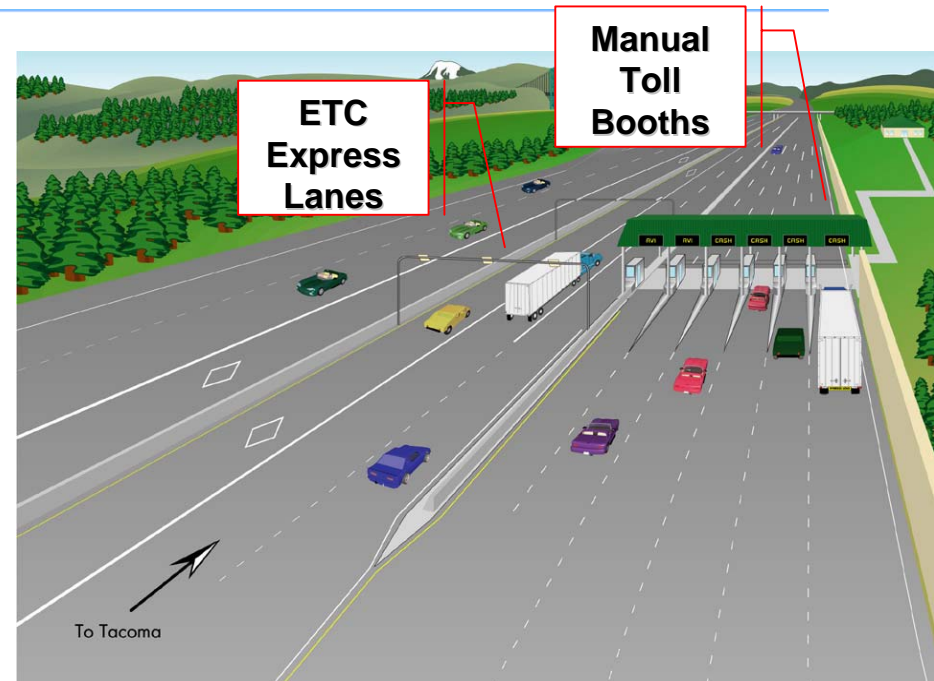
- 21 Toll Agencies
- 11 million transponders
- Eastern US



- 1.25 million transponders
- Statewide in California

Toll Collection At Tacoma Narrows Bridge

- **Combination of Manual and Electronic Toll Collection**
- **Establishes Customer Service Center**
- **Provides Violation Enforcement Processing**



Time of Day Tolling Attempt to Manage Traffic

Characteristics

- Enabled by Newer Toll Collection Systems
- Fixed Time of Day Schedule

Examples

- CA SR 91
- New York Bridges and Tunnels
- Orange County (CA) Transportation Corridor Agencies

91 Express Lanes Toll Schedule
Effective July 1, 2004 Westbound
Riverside Co. Line to 55

	Sun	M	Tu	W	Th	F	Sat
Midnight							
1:00 am							
2:00 am			1.05				
3:00 am							
4:00 am		2.00					
5:00 am		3.30			3.20		
6:00 am		3.40			3.30		
7:00 am		3.75			3.65	1.50	
8:00 am	1.50	3.40			3.30	1.75	
9:00 am		2.75				2.10	
10:00 am							
11:00 am	2.10						
Noon							
1:00 pm			1.75			2.40	
2:00 pm	2.40						
3:00 pm							
4:00 pm					2.10	2.55	
5:00 pm	2.55						
6:00 pm					2.50	2.10	
7:00 pm					1.75		
8:00 pm	2.10						
9:00 pm		1.05					
10:00 pm							
11:00 pm							

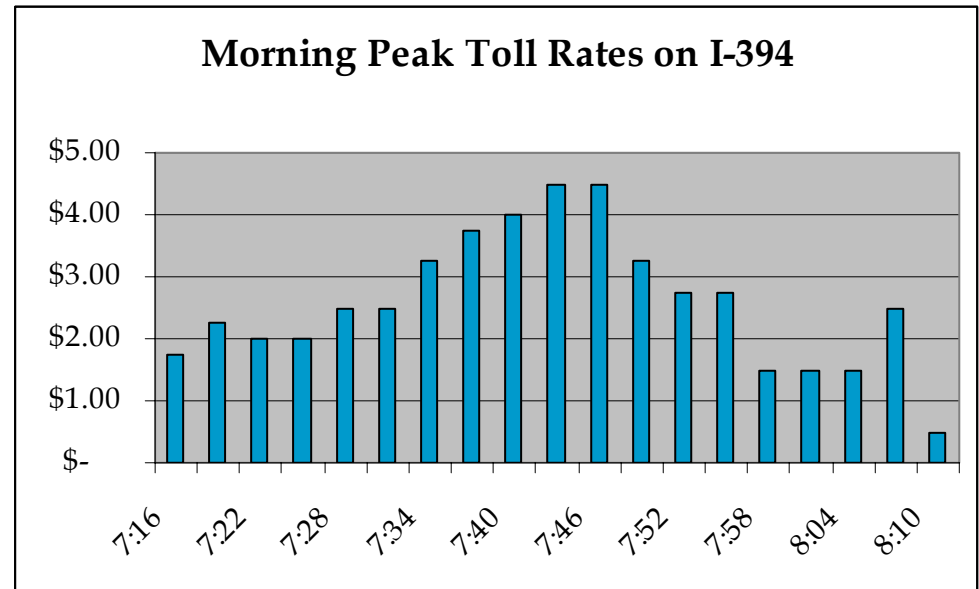
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	Sun	M	Tu	W	Th	F	Sat
Midnight							
1:00 am							
2:00 am							
3:00 am			1.05				
4:00 am							
5:00 am							
6:00 am							
7:00 am							
8:00 am	1.40		1.75				
9:00 am							
10:00 am	2.10						2.10
11:00 am							
Noon						2.60	
1:00 pm	2.50	2.35		2.60	4.05	2.50	
2:00 pm		3.40		3.50			
3:00 pm		3.65	3.90	6.25			
4:00 pm		4.40	5.00	5.50	6.25		
5:00 pm	2.10	4.95	5.50	6.25			
6:00 pm		3.65	3.80	3.90	4.10	4.40	2.10
7:00 pm			2.60	3.70	4.10		
8:00 pm				2.35	3.70	1.75	
9:00 pm		1.75			2.35		
10:00 pm		1.05			1.75		
11:00 pm							

Dynamic Pricing

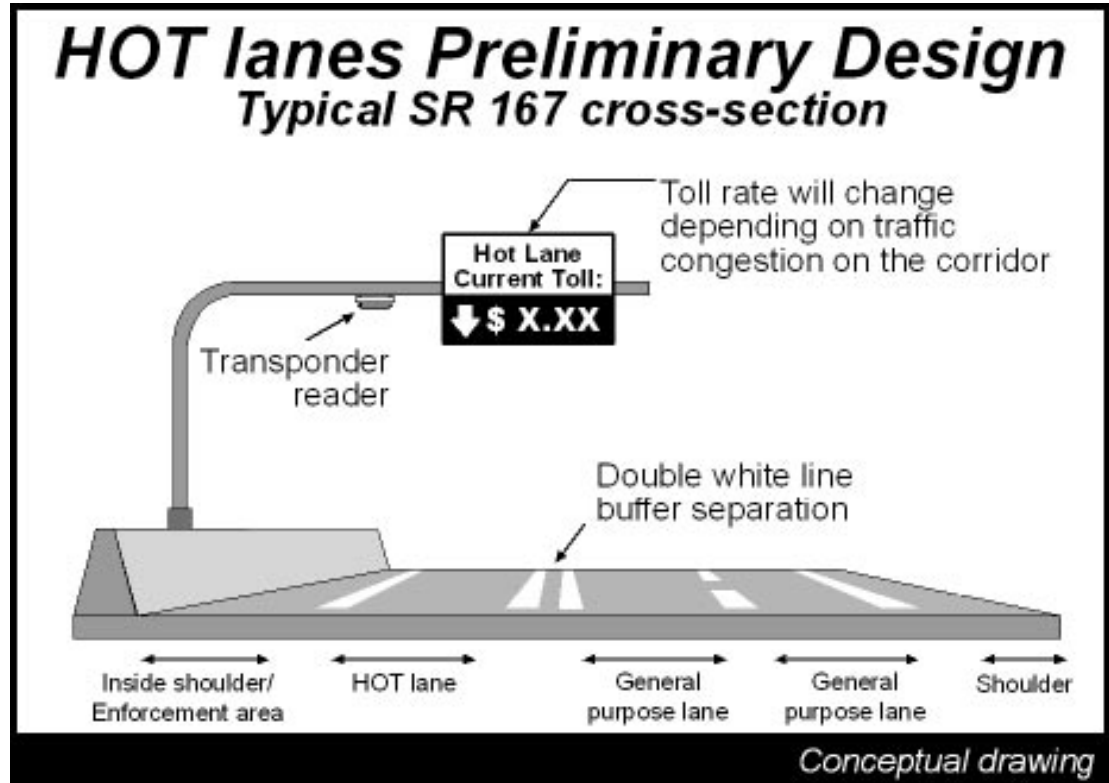
● Characteristics

- **Toll Rate Based Upon Actual Traffic Conditions**
 - Speed
 - Congestion
- **Need to Tell Driver What the Current Toll Rate Is**
 - Before They Enter the Facility



High Occupancy Toll (HOT) Lanes

- **Characteristics**
 - “Sell” excess capacity of HOV Lanes to SOVs
 - Dynamically priced
 - Electronic toll collection
 - Enforcement manual (for now)



Express Toll Lanes

- **Characteristics**

- Just like HOT, but HOVs pay
- Guarantees performance on a managed facility
- Eliminates HOV enforcement difficulties and costs

- **Examples**

- Under consideration in Maryland and Minnesota






HOT or Express Lane Systems

● Characteristics

- Multiple Routes
- Multiple ons and offs
- Driver communication becomes complex

● Under Consideration

- San Francisco Bay Area
- San Diego County
- Texas
- Minnesota

CURRENT TOLL			
	To 	To 	To 
SOV	\$0.50	\$1.00	\$2.50
HOV 2+	Free	Free	Free

Price all roads

• Characteristics

- Toll could be based on
 - Distance
 - Congestion
 - Time of Day
 - Vehicle Type
 - Emissions
- Enormous data needs
- Non locals a BIG challenge

• Examples

- German Truck Tolling
- Puget Sound Regional Traffic Choices Study



Technology is changing fast

- **Enabling More Policy Choices**
- **Tacoma Narrows Bridge and SR 167 HOT lanes a start**



Next Steps

Jeff Buxbaum
Cambridge Systematics

Next steps

- **Washington-specific tolling policy framework**
- **Illustrative examples of projects and systems**
- **Draft Interim Report and review with Commission in December**
- **Provide information for the Commission's recommendations to Legislature**